

**Intensity (counts/30ms)**

FIG. 1A

Single quantum dot spectra

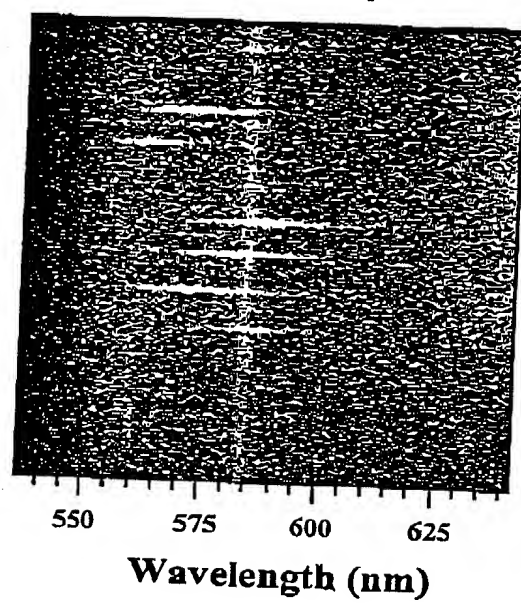


FIG. 1B

FIG. 2A



FIG. 2B

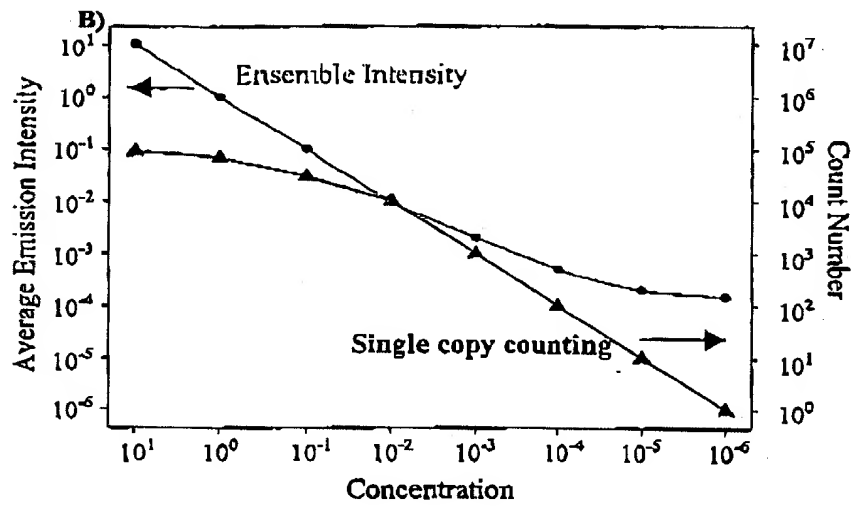


FIG. 2C

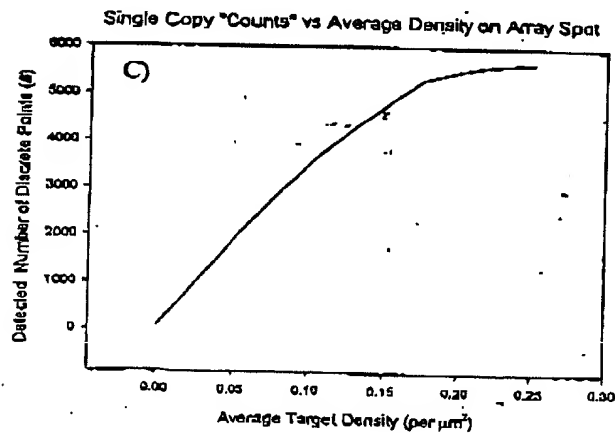


FIG. 3A

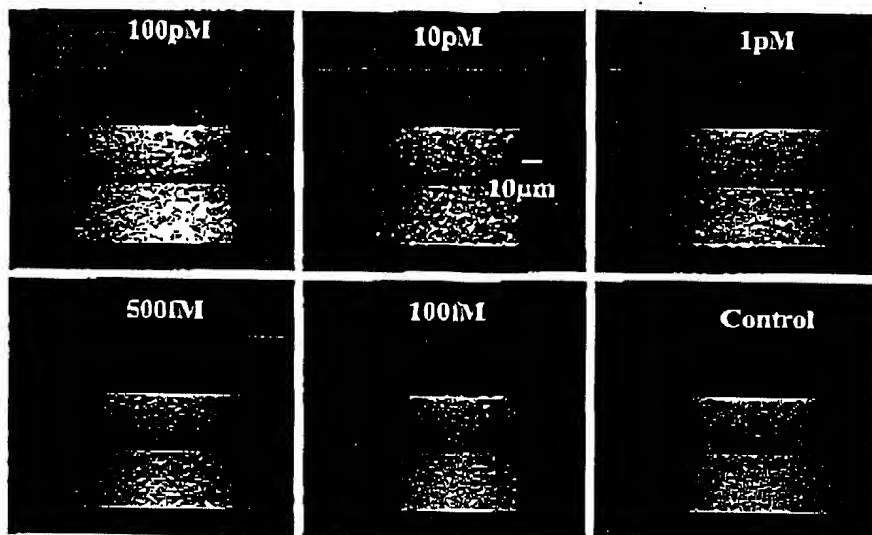


FIG. 3B

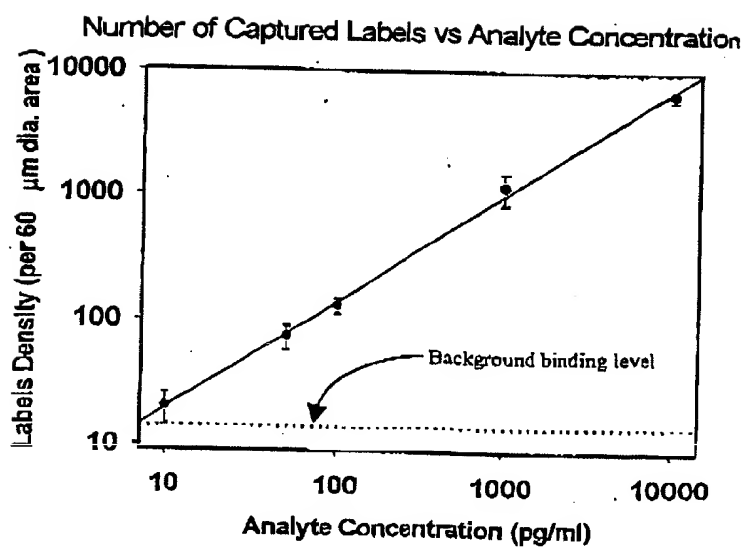


FIG. 4A

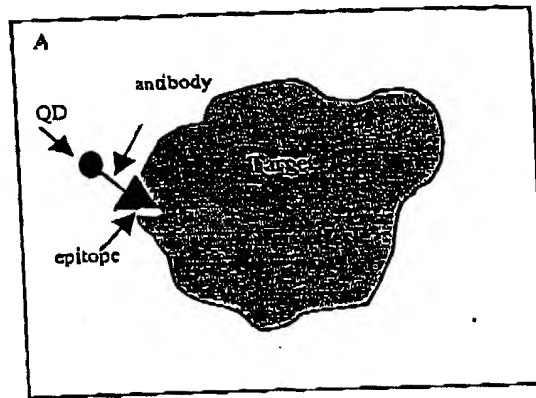
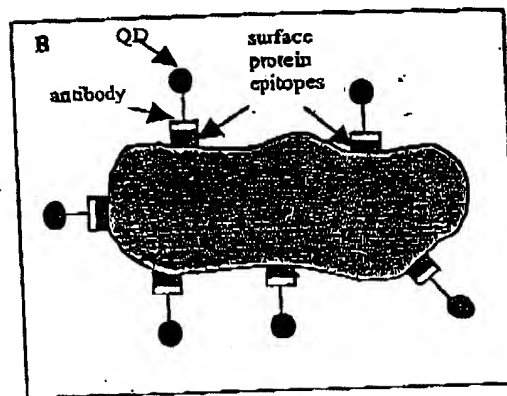


FIG. 4B



Ar laser  
488 nm

dispersing prism

to power meter and mode monitor

488 nm notch filter

Tunable Filter

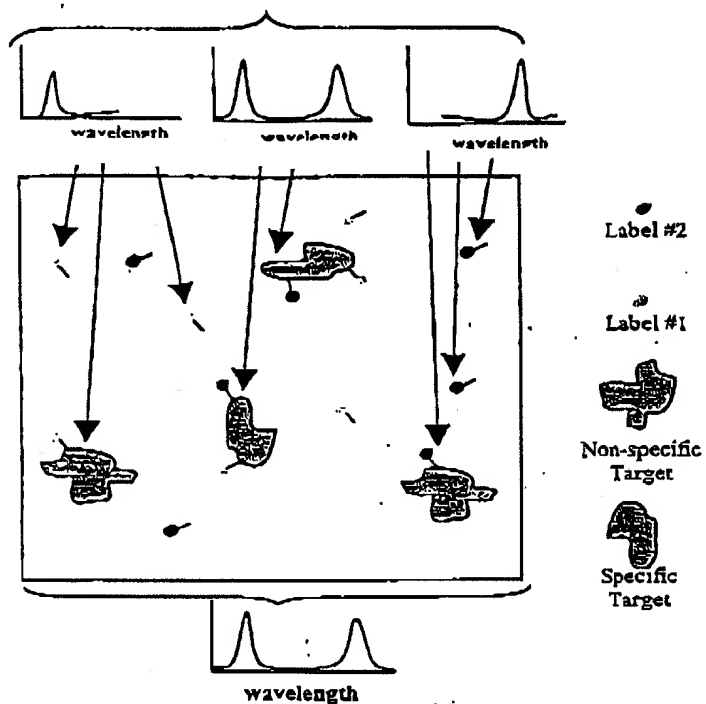
CCD detector

microscope objective

Microarray

FIG. 5

## Spectra with High Spatial Resolution



**Spectrum with Low Spatial Resolution**

FIG. 6

The flowchart describes the 'Universal' Assay for HIV Infection. It begins with an 'Image "universal" assay by eye', which leads to a decision: 'Is density low enough to count single analytes?'. If 'NO', the instruction is to 'Dilute sample and repeat'. If 'YES', the next decision is 'Are any "white" cells or "yellow" points present?'. If 'NO', the conclusion is 'No infection'. If 'YES', the next step is to 'Compare number of "white" cells and "yellow" points to threshold values'. This step leads to two possible outcomes: 'Counts below both thresholds' (leading to 'Conclusion: No infection') and 'Counts above threshold!' (leading to 'Possible infection! Send assay for confirmation and identification').

```

graph TD
    A[Image "universal" assay by eye] --> B{Is density low enough to count single analytes?}
    B -- NO --> C[Dilute sample and repeat]
    C --> A
    B -- YES --> D{Are any "white" cells or "yellow" points present?}
    D -- NO --> E[Conclusion: No infection]
    D -- YES --> F[Compare number of "white" cells and "yellow" points to threshold values]
    F -- "Counts below both thresholds" --> G[Conclusion: No infection]
    F -- "Counts above threshold!" --> H[Possible infection! Send assay for confirmation and identification]
  
```

**"Universal" Assay Results**

# of "white" cells < 5?	OK
# of "yellow" points < 20?	OK

**"Universal" Assay Results**

# of "white" cells < 1?	OK
# of "yellow" points < 20?	OK

FIG. 7



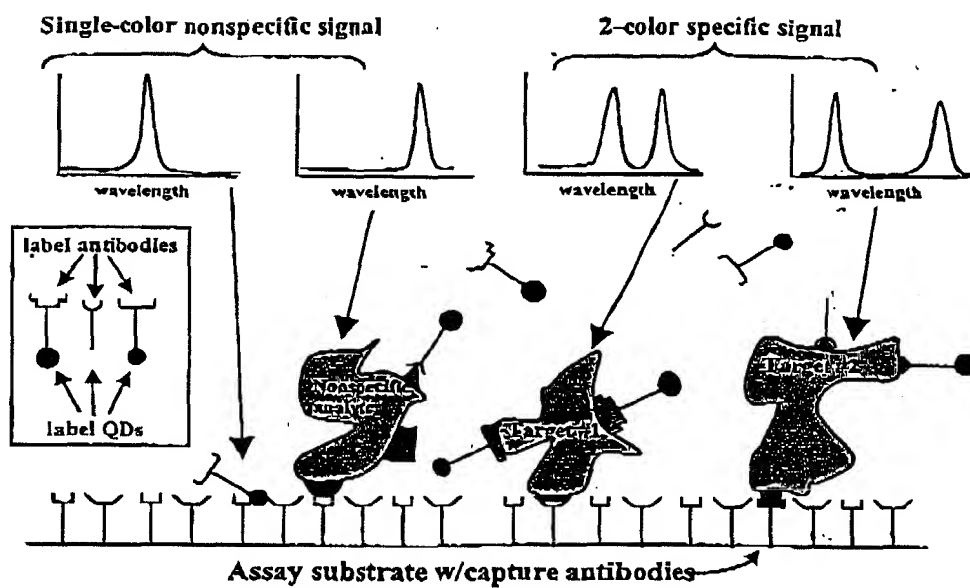


FIG. 9

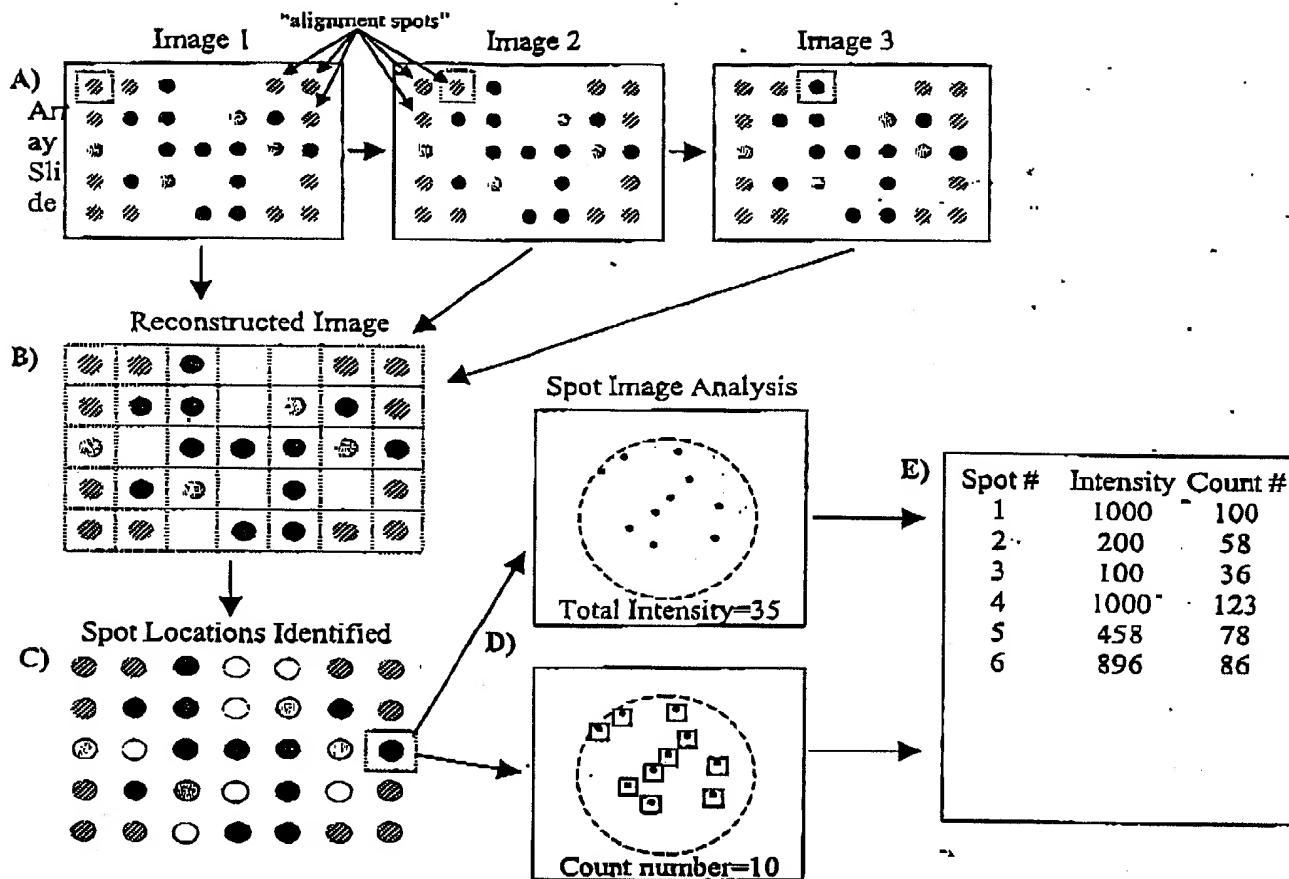


FIG. 8



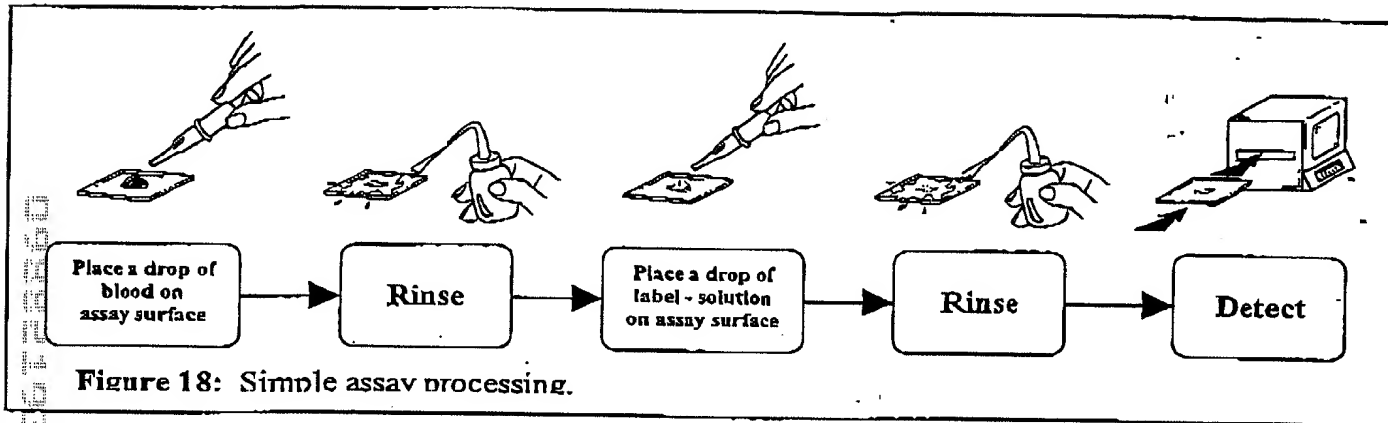


FIG. 11

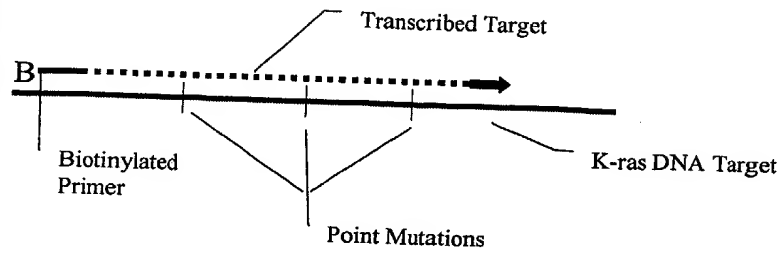


FIG-12

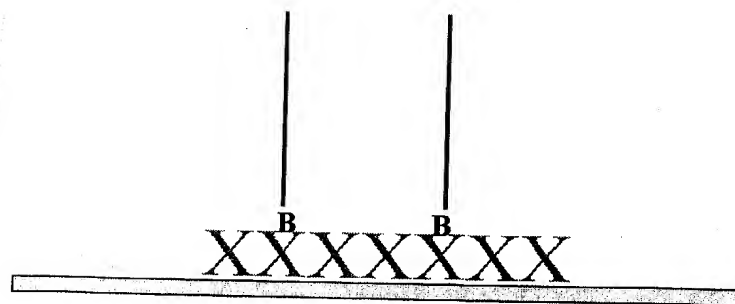
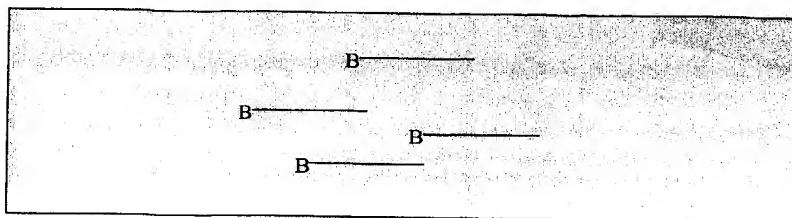
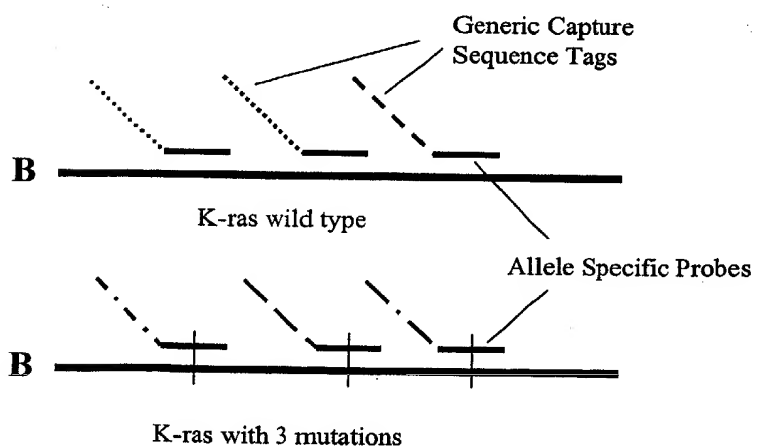


FIG-13



FIG\_14



FIG\_15

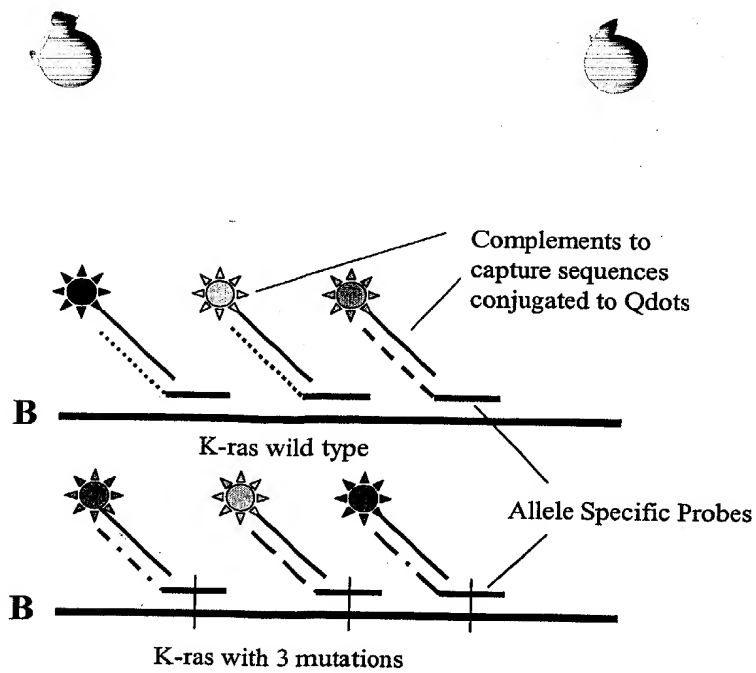


FIG-16

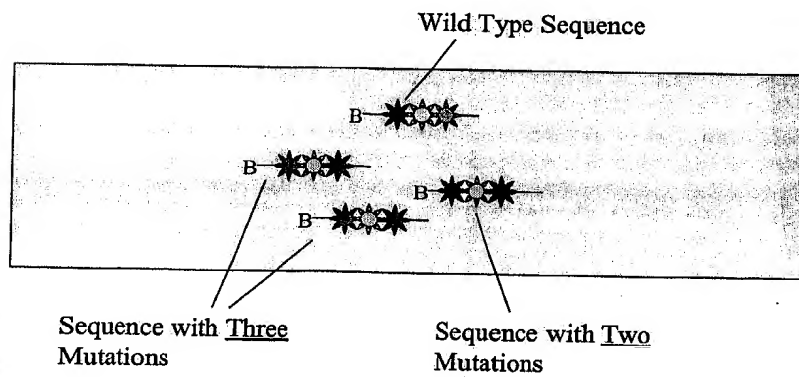


FIG-17